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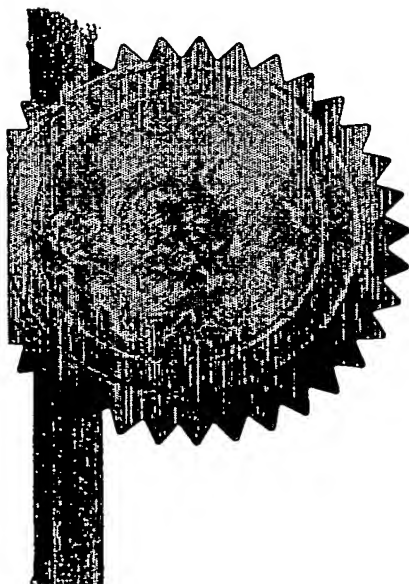
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Dated

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D YOUNG &amp; CO

NO. 547 P. 3

0310951.9

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INTELLPROP LIMITED  
PO BOX 626  
NATIONAL WESTMINSTER HOUSE  
LE TRUCHOT ST PETER PORT  
GUERNSEY

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

A GUERNSEY COMPANY

2900533001

## 4. Title of the invention

TELECOMMUNICATIONS SERVICES APPARATUS

## 5. Name of your agent (if you have one)

D Young &amp; Co

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

21 New Fetter Lane  
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Number of earlier application

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Yes

- a) any applicant named in part 3 is not an inventor, or  
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Description 9

Claim(s) 0

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Priority documents 0

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Statement of inventorship and right to grant of a patent (Patents Form 7/77) 2

Request for preliminary examination and search (Patents Form 9/77) 0

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11.

I/We request the grant of a patent on the basis of this application.

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Date 13 May 2003

D Young &amp; Co (Agents for the Applicants)

12. Name and daytime telephone number of person to contact in the United Kingdom

A J M Pilch

023 8071 9500

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Patents Form 1/77

TELECOMMUNICATIONS SERVICES APPARATUS

This invention concerns the field of telecommunications and in particular the area of messaging over telephone networks.

5 Text Messaging is established as a popular and effective means of communication. This has primarily arisen in connection with mobile telephone networks, but increasing the technology is also being applied to fixed telephone networks. Interworking is also increasingly being established between different types of mobile network, and with fixed networks.

10

As an example, the Short Message Services (SMS) of the GSM mobile telephony system provide such a text messaging facility, and support for the composition, transmission and reception of Short Messages is present in the majority of GSM mobile terminals. The following discussion is described in the context of text  
15 messaging (including SMS, EMS, MMS and the like) on the GSM system but is also applicable to other types of network.

The Short Message Services of GSM define signalling messages within the Mobile Application Protocol (MAP) for transferring the Short Message in Mobile Originated  
20 (MO) mode between the Mobile Handset and the Short Message Service Centre and in Mobile Terminated (MT) mode between the Short Message Service Centre and the Mobile Handset.

The SMS mechanism was originally defined for mobile-to-mobile text messaging, but  
25 has been extended to permit communication between mobiles and fixed entities in a network known as SMS Hosts (or equivalently SMS Applications.) SMS Hosts are typically used for receiving the results of SMS voting events, transmitting messages such as football results in bulk to users who subscribe for example to a football service, or for providing a wide range of value added services for mobile users and  
30 businesses. SMS Hosts are responsible for an increasing proportion of SMS traffic.

One of the features of SMS is that an identifier corresponding to the sender's identity is always transmitted to the recipient. It may not be optionally withheld by the sender. This Calling Line Identity (CLI) is normally sent, and may be displayed, in the form of an MSISDN, though most handsets will translate this to an alphanumeric name if there is a corresponding MSISDN entry in the handset's address book. This provides ease of recognition of the sender, without the recipient having to remember telephone numbers. The mobile CLI feature is analogous to the CLI facility available on fixed networks. Another benefit of receiving CLI is that a reply to the message is more easily achieved, without having to explicitly specify the return address. The MMI for mobile handsets defines Reply as a standard feature.

Text messaging requires textual entry using the standardised Man Machine Interface (MMI) of the mobile handset, and also requires that the message be addressed to the desired recipient. The destination address for the message may typically be specified either by entering a Mobile Station ISDN number (MSISDN), which is the mobile telephone number of the desired recipient, or by selecting an entry from the handset's address book if it already has the desired MSISDN pre-programmed in. The address book normally provides the MSISDN by using alphanumeric look-up of an entered name.

20

As an alternative to numeric address fields, the GSM text message transmission protocols support an alphanumeric format for the address. In MO and MT messages an alphanumeric is allowed in place of a numeric destination address, and in MT messages an alphanumeric is allowed in place of a numeric origination address (CLI).

25

This permits for example destination addresses to be specified as a name rather than a number by the sender, providing increased convenience and usability. Another example is the facility for transmission of the CLI identifier of a text message as an Alphanumeric value or name instead of as a number. Support for reception and correct display of an Alphanumeric CLI is almost universally available on recent mobile telephones.

30

Unfortunately sending a text message with an alphanumeric destination address is generally not supported by current networks. Similarly, replying to a message received with an Alphanumeric CLI, is generally not supported by current networks. These are because the network has no means to identify the HLR which should be queried to  
5 look up the International Mobile Subscriber Identity (IMSI) of the desired recipient from the Alphanumeric identifier. Even if the correct HLR could be identified by for example the SMSC, the HLR would normally only be capable of looking up an IMSI from an MSISDN. The SMSC therefore normally rejects a message with an alphanumeric destination address as undeliverable.

10

Consequently, if a subscriber attempts to send a message using an Alphanumeric destination address, a facility supported by the majority of modern handsets, then current networks will reject the sending attempt, and the user will receive a 'Message not sent' error on his handset, or an equivalent message.

15

The Internet uses a domain name lookup system where Domain Name Servers (DNS) may be consulted using a standardised protocol in order to translate an alphanumeric web address (URL) entered by a user into a web browser into a numeric Internet (IP) address for routing.

20

According to the invention there is provided a telecommunications services apparatus comprising a text message routing apparatus and Network Name Server apparatus wherein the text message routing apparatus is operable to query the Network Name Server with at least part of the message apparatus in response to receipt of a text  
25 message with an alphanumeric routing address, and the Network Name Server apparatus is operable to respond to queries from text message routing apparatus, whereby the Network Name Server can translate an alpha address contained in the query into an alternative address and either return this to the text message routing apparatus or pass the at least part of the message containing the translated address to  
30 alternative delivery means, allowing the network to deliver the message according to the address and address type.

According to the invention there is further provided a method whereby a text message routing apparatus is operable to query a Network Name Server apparatus in response to receipt of a text message with an alphanumeric routing address, and the Network Name Server apparatus is operable to respond to queries from text message routing  
5 apparatus, whereby the Network Name Server can translate an alpha address contained in the query into an alternative address and either return this to the text message routing apparatus or pass the at least part of the message with the translated address to alternative delivery means, allowing the network to deliver the message according to the address and address type.

10

According to the invention it is further disclosed that the returned address type may be an MSISDN or an email address, or another type of address, or a combination of these. The Network Name Server may support queries from a single network or multiple networks. The Network Name Server may return a different translation according to  
15 the identity of the originating network.

Referring to Figure 1, Messages sent from users of a telecommunications network are routed via an MSC (1) and an SMS Router (2). The SMS Router performs address translation for at least some messages that have an alphanumeric destination address  
20 by means of query to a Network Name Server (5). Depending on the outcome of the query and the address type following translation, the message may be routed to an MSISDN number, e.g. directly to an end user or to an SMS Host (6) or via an SMSC (3), or the message may be routed to an email address via an email gateway (7) or to another type of destination. The Network Name Server is provisioned via a  
25 provisioning network (4) which may use TCP/IP, SS7 or another protocol.

The present invention solves the problem of lack of support for alphanumeric destination addresses in current telephone networks without requiring any changes in the handset. It provides support for the use of alphanumeric destination addresses on  
30 Mobile initiated messages, providing increased convenience and connectivity for users, thereby promoting traffic and revenue.

The invention would also allow the standard Reply function of a mobile handset to work successfully for messages that have an alphanumeric origination address (CLD), without any changes being required in the handset. On reply, this address is used as the new destination address.

5

In order that alphanumeric addressing can be successfully adopted by a telephone network it is desirable that the translation of a wide range of alphanumeric strings is supported, and that the translation should be available to all of the network's customers, or to those who subscribe to a premium service. The translation may provide an equivalent MSISDN, email address or other address format in order to allow messages with such translated addresses to be delivered. The delivery method and message format may be determined by the format of the translated delivery address, or by other means.

15 In preferred embodiments of the invention, text messages sent by subscribers to a network are routed to a text message routing apparatus that is capable of determining for each message whether the message contains an alphanumeric destination address, and if so, to query a Network Name Server in order to provide a routable address. The text message routing apparatus, in the case of GSM networks is preferably an SMS Router.

20

A similar principle to Internet DNS, using Network Name Servers (NNS) is required to support the present invention, but with the following differences from DNS:

- 25 • Network Name Servers may have application to only the subscribers of a certain telephone network, or to a subset thereof.
- Network Name Servers may have regional boundaries so allow localised address translation.
- Network Name Servers are only used to translate the destination addresses of a subset of text messages sent from mobile telephones or SMS-capable terminals.
- 30 • Network Name Servers are only used to translate the destination addresses of text messages sent using the alphanumeric format.



- The translation may be performed from an Alphanumeric text message destination address into one of a number of possible alternative address formats, including but not limited to MSISDN telephone number and email address, whereas DNS only supports a single translation type.

-----5-----  
• ~~Alphanumeric destination addressing is a presently unused and unexploited~~  
aspect of mobile telephony and text messaging, and so the application of DNS-like techniques in this area is novel and non-obvious.

It is also possible that two or more networks, at least within a national domain, may  
10 wish to share their alphanumeric translation databases, but it is likely that individual networks would want to maintain their own.

The invention provides unprecedented convenience for the user, in that whereas  
telephone numbers or email addresses are generally hard to remember and may not be  
15 known, people very easily remember names, for example the names or companies, brands or products. When a person is out of the office, away from home or simply away from other means of accessing a directory, then all that the person is likely to have with them is their mobile telephone. The following few examples illustrate how the present invention provides ease of use and a level of connectivity that was not  
20 possible before:

- The user realises that he has lost his Visa card. He does not have any telephone numbers to hand but he is able to send a text message to the address 'VISA' to request assistance.
- While listening to the radio, the user is invited to submit a music request. The  
25 presenter may give out a fax or email address, or a telephone number, but these are hard to remember and inconvenient to write down. However the user is able to send a text message using the name of the radio station, which is well known to him, as an alphanumeric address.
- The user is in Lisbon and wishes to contact the local office of British Airways  
30 to ask about flights. He does not have any local telephone numbers, and does not have the language skills to use a directory service. He sends a text message to the alpha address BA and obtains what he requires.

- In an embodiment of the invention, a user sends a mobile or fixed originated text message to an alphanumeric address, for example Lufthansa. I.e. the destination address field in the message sending protocol is populated with the text 'Lufthansa',
- 5 and the address is marked as being in alphanumeric format. A maximum of 11 characters are normally allowable in GSM for such alpha addresses. No other destination information is required in the message apart from, in the case of GSM, the fixed service centre address that is provided by the handset configuration.
- 10 The message is then routed via an SMS Router (or equivalent processing module,) which examines the destination address and determines that it is in alphanumeric format. The SMS Router then queries a Network Name Server to obtain a translation. The returned translation may be an email address, in which case the message is delivered to an email gateway for conversion to email format for onward delivery to
- 15 the email address. Alternatively the translated address may be an MSISDN telephone number, in which case the SMS Router can proceed with normal delivery options for MSISDN addressed messages. Further, the translated address may be a network address reachable by one of a number of protocols, such as a network point code or global title for SS7, or an IP address for a destination on a data network, an SMS Host
- 20 address on an X.25 data network or any other type of address.

- SMS Routers in multiple networks may be configured with the addresses of one or more Network Name Servers to use, and it would be possible for Network Name Servers to be arranged hierarchically for updating purposes to allow simplified
- 25 updating in the same way that DNS servers are updated. However in this application, it is preferable that Network Name Servers are localised to a network, or to a territory, because translations are likely to be in most cases only of national significance, not international, although naturally there will be exceptions to this. Networks may also wish to restrict service to their own premium customers.

In a preferred embodiment a provisioning system is provided to enable the operator to update and maintain the database, and to access its translation facilities. in an alternative embodiment, the system could be operated by a multiple networks, each  
5 with its own provisioning interface.

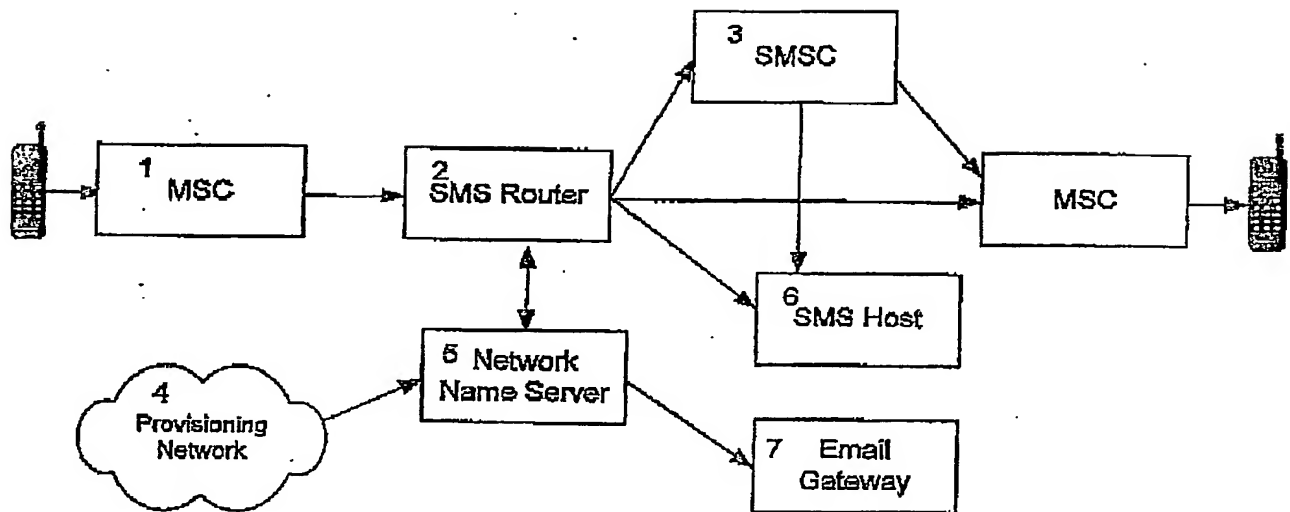
In addition to being able to send Mobile initiated messages with alphanumeric destination addresses to SMS Hosts, Mobile networks using this invention could also offer users the option to adopt a personal alphanumeric identity as an alias for their  
10 MSISDN. These identities might need to be unique across the whole network, or unique within a closed user-group or community. Messages could then be sent to other users by using their Alphanumeric address instead of a destination telephone number.

15 The present invention provides a new facility for telephone networks that allows its customers to contact any company or brand using the text-capable terminal that they carry or have at home. this provides an increase in connectivity and usability for telephone networks that has not been possible before. a 'threshold law' is recognised, which teaches that uptake of a new form of behaviour, in this case usage of a new  
20 service, is inversely proportional to the 'threshold' or degree of effort (either cognitive or physical) required on the part of the user for each and every use. for the present invention, the threshold is extremely low, since the alphanumeric names to be used as addresses will for the most part be already known to the user. this provides ease of access to brand names, products and companies that was not possible before, because  
25 the threshold for seeking out an associated telephone number was too high. this barrier is removed by the use of alphanumeric addressing.

In so far as the embodiments of the invention described above may be implemented, at least in part, using software controlled processing apparatus, it will be appreciated that

a computer program providing such software control and a storage medium by which such a computer program is stored are envisaged as aspects of the invention.

1/1

**Figure 1**

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